# 学位論文の要旨

Declined Functional Status Prolonged Hospital Stay for Community-Acquired Pneumonia in Seniors.

(機能状態の低下は高齢者が市中肺炎で入院を延長する原因である)

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## 1. Instruction

The aging of populations around the world has been associated with increases in morbidity and mortality attributable to lung diseases. Advancing age increases the susceptibility to severe bacterial pneumonia. The annual incidence of community-acquired pneumonia (CAP) in the United States has recently been estimated as 248 cases per 10,000 adults, and the incidence of hospitalization for pneumonia was approximately 25 times higher among adults ≥80 years old than among adults 18–49 years old.(Jain, et al., 2015)CAP hospitalizations cost $13 billion USD annually, and this figure is expected to grow with the aging population.(Brown, et al., 2018) Japan has been the most rapidly aging society in the world, with a life expectancy of 80.1 years for men and 86.4 years for women. (Tokudome, et al., 2016)Pneumonia is the third highest cause of death, with most of these deaths occurring among seniors.(Ishiguro, et al., 2016)

Besides the high mortality, senior CAP patients also experience deteriorations of functional status during and after treatment, as an important component of quality of life for older adults and their caregivers.(Simone & Haas, 2013) The prevalence of functional declines has been reported at 8.6% among CAP patients. (Kosai, et al., 2014)Functional declines during or after hospitalization are associated with adverse health outcomes, prolonged hospital stays, more frequent episodes of early hospital readmission and even higher long-term mortality rates.(Jeon, et al., 2017; Tonkikh, et al., 2016) Only a few studies have focused on changes in functional status for seniors after hospitalization. The present study focused on changes of functional status delaying discharge for CAP in seniors.

## 2. Materials and method

Senior patients hospitalized with CAP were divided into two groups: early discharge group, discharged ≤1 week after the end of antibiotic treatment; and a delayed discharge group, discharged >1 week after the end of antibiotic treatment. All enrolled cases had been diagnosed with CAP according to definitions in the American Thoracic Society/Infectious Diseases Society of America guideline.

Patients who fulfilled all the following inclusion criteria were enrolled in the study: 1) age >64 years; 2) symptoms compatible with pneumonia (eg, fever, cough, sputum, pleuritic chest pain, or dyspnea); and 3) appearance of new pulmonary infiltrates consistent with pneumonia
on chest X-ray or computed tomography. Duration of antibiotic treatment was determined including both injections and oral anti-bacterial medicines. Functional status was assessed on admission and at discharge. Requirements for rehabilitation were determined on the day of admission.

Cases of healthcare-associated pneumonia (HCAP) and hospital-acquired pneumonia (HAP) were excluded. Repeated episodes of pneumonia in the same patient within a 2-week period were regarded as a single episode. Cases with complications that occurred during admission (myocardial infarction, femoral fracture, cerebral infarction, etc.) and that would have affected discharge from hospital were also excluded.

## 3. Result

We identified 1368 patients diagnosed with pneumonia. After excluding 1043 cases with reasons, the remaining 325 cases were included in the study, comprising 170 patients in the early group and 155 patients in the delayed group. Participants comprised 212 men (65.2%) and 113 women (34.8%), with a median age of 80 years. Patients in the delayed group were older and showed higher ratios of dementia, aspiration and higher PSI category. First-choice antibiotics showed no significant difference between groups (p=0.83).

Multivariable analyses of factors contributing to delayed discharge and in-hospital mortality are conducted. Decreased PS, enrolment for rehabilitation, PSI category, aspiration and age were independently associated with delayed discharge (odds ratio (OR) 4.31, 95%

confidence interval (CI) 2.32–7.98; 2.34, 95% CI 1.43–3.82; 3.63, 95% CI 1.37–9.69 (PSI III vs II); 5.08, 95% CI 1.81–14.3 (PSI IV vs II), 15.96, 95% CI 4.56–55.8 (PSI V vs II); 2.48, 95% CI 1.11–5.98; and 1.03, 95% CI 1.01–1.06; respectively). Decreased PS, PSI V, aspiration and age were independently associated with in-hospital mortality (OR 21.6, 95% CI 5.1–119.1; 18.3, 95% CI 3.8–93.2; 4.61, 95% CI 1.35–16.22 and 1.04, 95% CI 1.01–1.09; respectively).

## 4. Discussion

In this retrospective cohort study, decreased functional status was observed more frequently in the delayed discharge group than in the early discharge group. After multivariable regression analysis, decreased functional status was identified as an independent factor contributing to delayed discharge. Only a few patients in the delayed group could be discharged within 2 weeks, and more than half could not be discharged within 4 weeks. Decreased functional status was considered to affect length of stay in both the short and long term after admission. In the delayed group, despite a higher frequency of enrolment to receive rehabilitation, declines in functional status were also more frequent. Exercise or sports in midlife reduces the risk of functional limitations and disability, but effective methods of rehabilitation to prevent declines in functional status remain unclear for seniors. A need for rehabilitation itself was found to prolong the length of stay.

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Volume 27 No 15 page 1513～1519; 2020

II 副論文 なし

III 参考論文

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